WM-FS473

SERVICE MANUAL

Ver 1.0 1998. 05

US Model
Canadian Model
AEP Model
E Model

Model Name Using Similar Mechanism	NEW
Tape Transport Mechanism Type	MF-WMFS473

SPECIFICATIONS

Frequency range	FM : 87.5 – 108 MHz AM : 530 – 1710kHz (US, Canadian model) 531 – 1602kHz (AEP, E model)
Power requirements	3V DC batteries (AA) R6 x2
Dimensions	104.2 x 127.3 x 51.8 mm (4 1/8 x 5 1/8 x 2 1/8 inches) (w/h/d) incl. projecting parts and controls
Mass	Approx. 260g (9.2 oz) Approx.340g (12 oz) incl. batteries and a cassette
Supplied accessory	Stereo headphones or Stereo earphones (1)

Design and specifications are subject to change without notice.

RADIO CASSETTE PLAYER

MICROFILM

SONY®

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Flexible Circuit Board Repairing

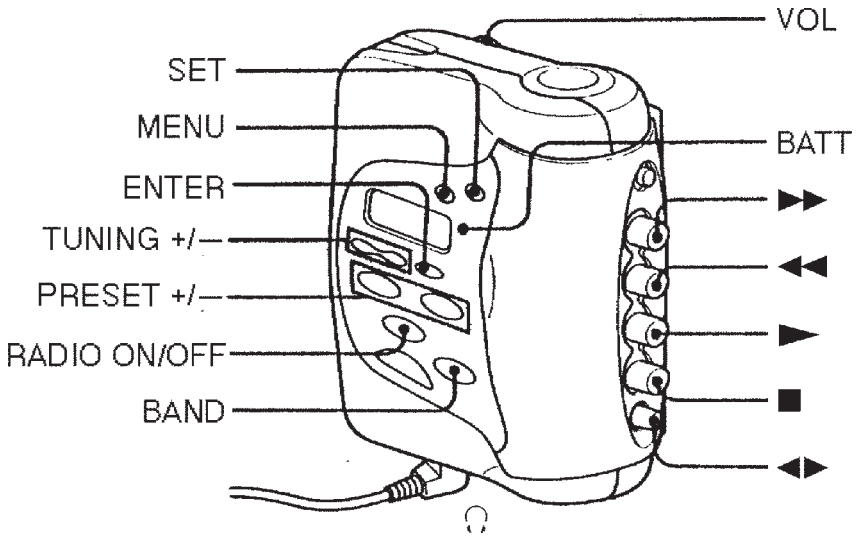
- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SECTION 1
GENERAL

This section is extracted from instruction manual.

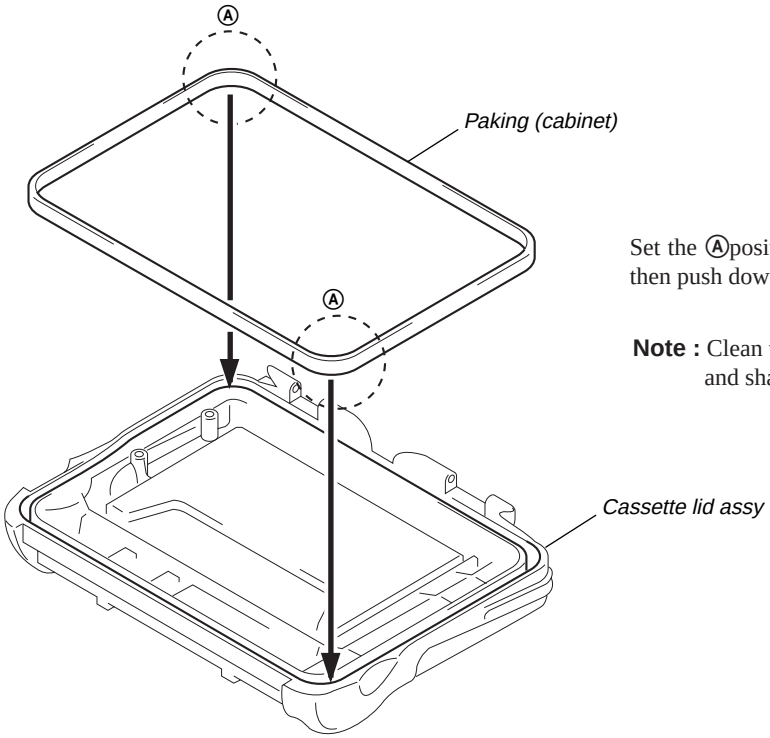


SECTION 2
SERVICE NOTE

WATERPROOFED SECTION

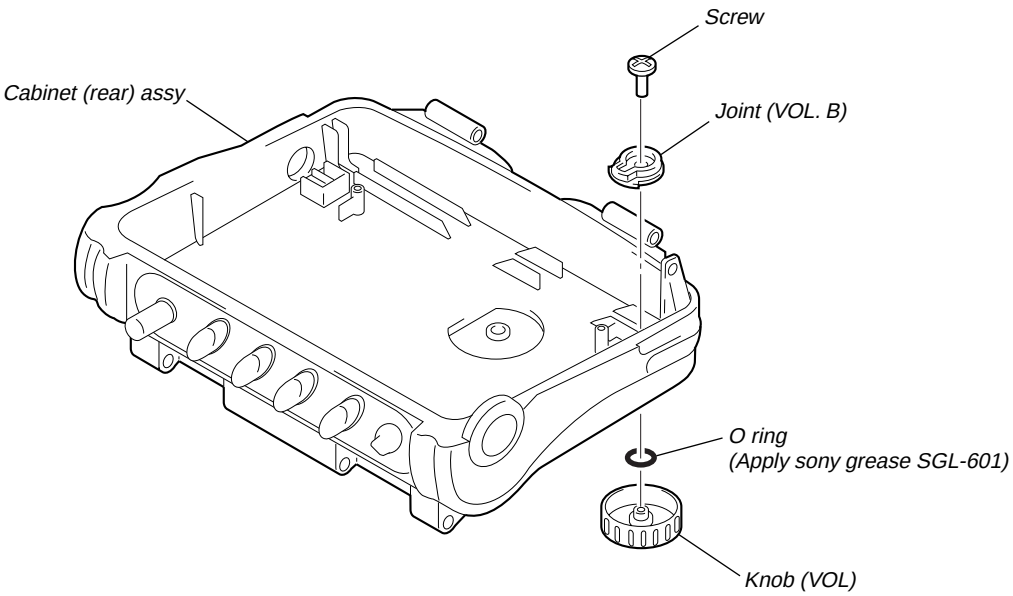
Note : In case the parts in the figure are removed for repair, treat them to protect from water drop following the instructions in the figure (spread grease, bond etc.)

• Sony grease SGL-601 : 7-651-000-10



Set the Ⓐpositions to corner.
then push down to grove.

Note : Clean the attachement portion and shaded area with cloth.



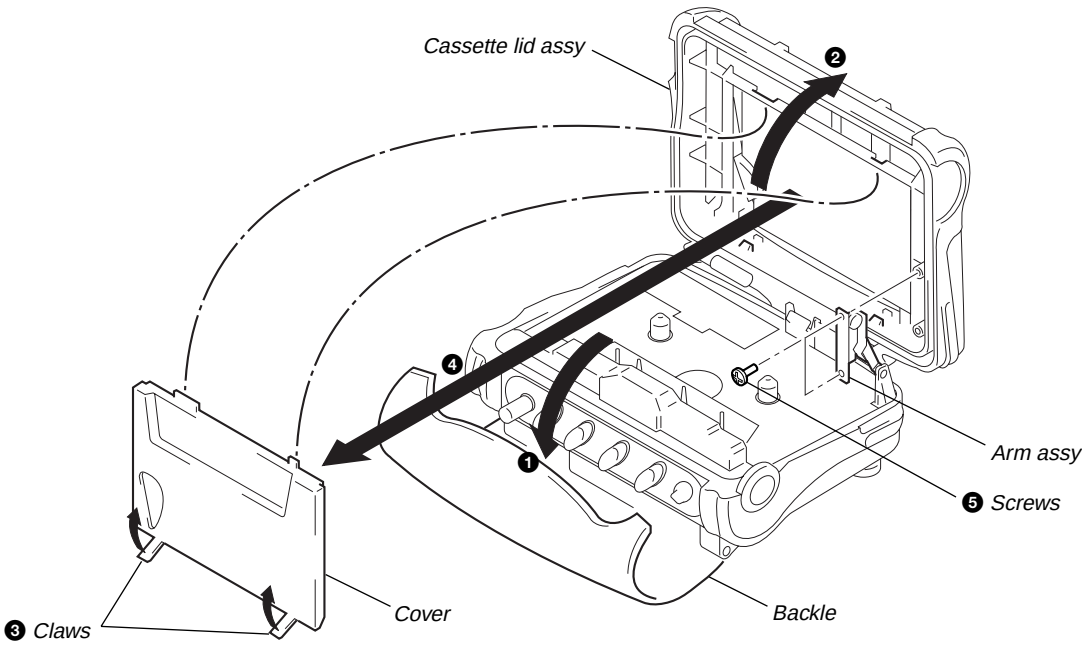
SECTION 3
DISASSEMBLY

● The equipment can be removed using the following procedure.

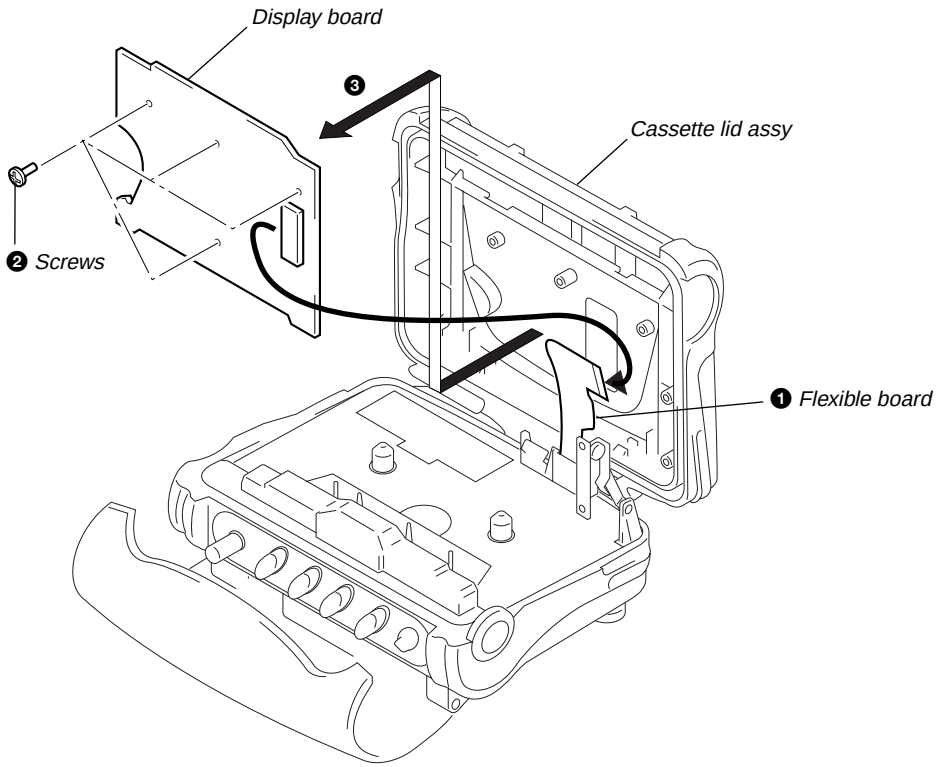
Set → Cover → Diaplay board
Cover → Cassette lid assy
Cover → Chassis section, Headphone jack board → Mechanism deck, Main board, Belt

Note: Follow the disassembly procedure in the numerical order given.

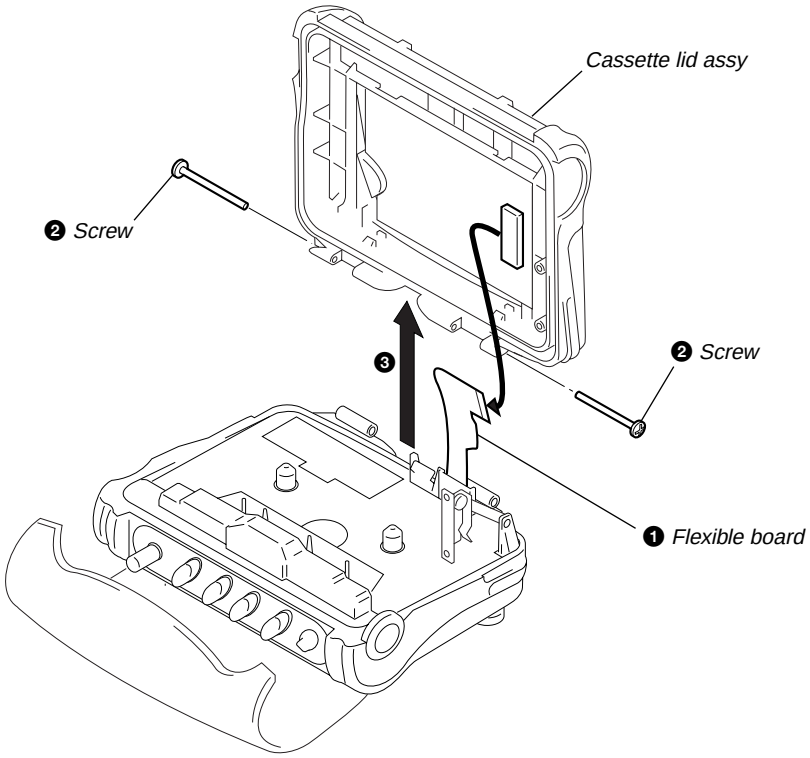
3-1. COVER REMOVAL



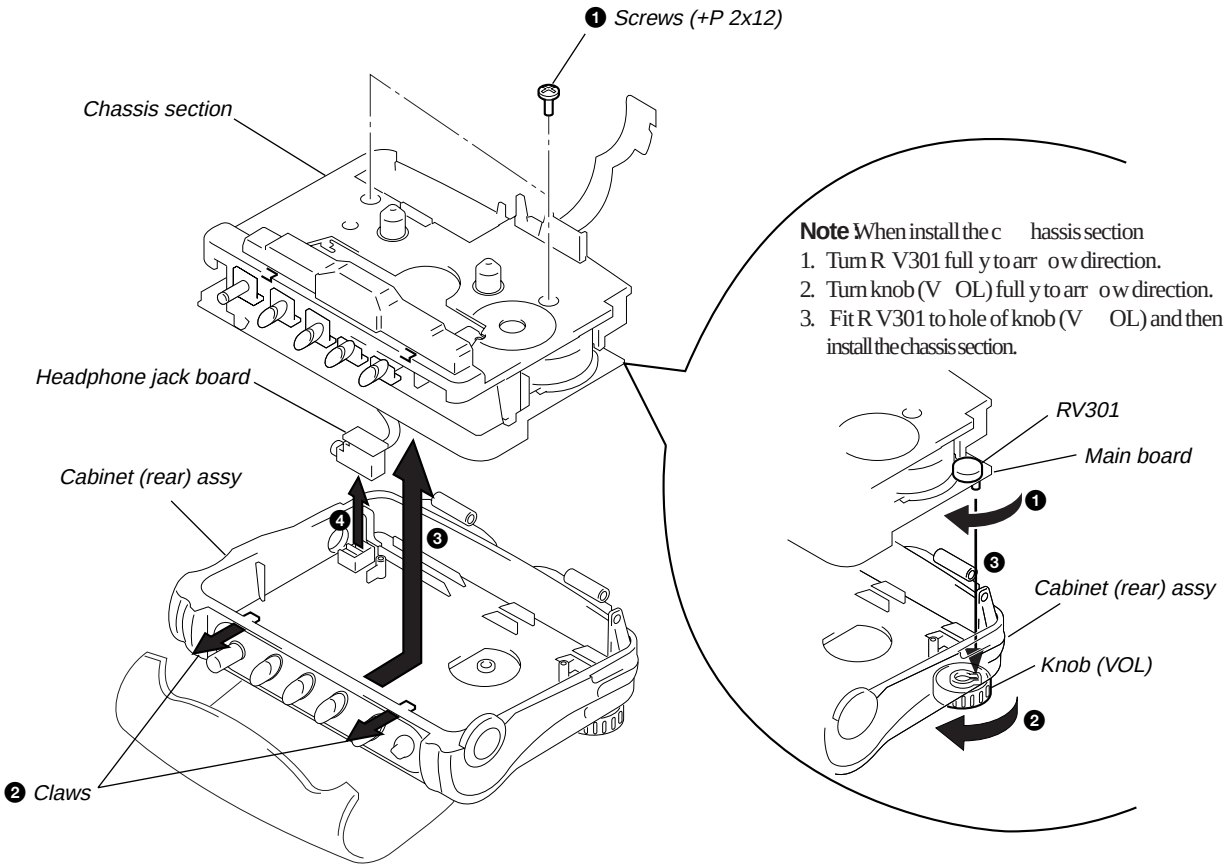
3-2. DISPLAY BOARD REMOVAL



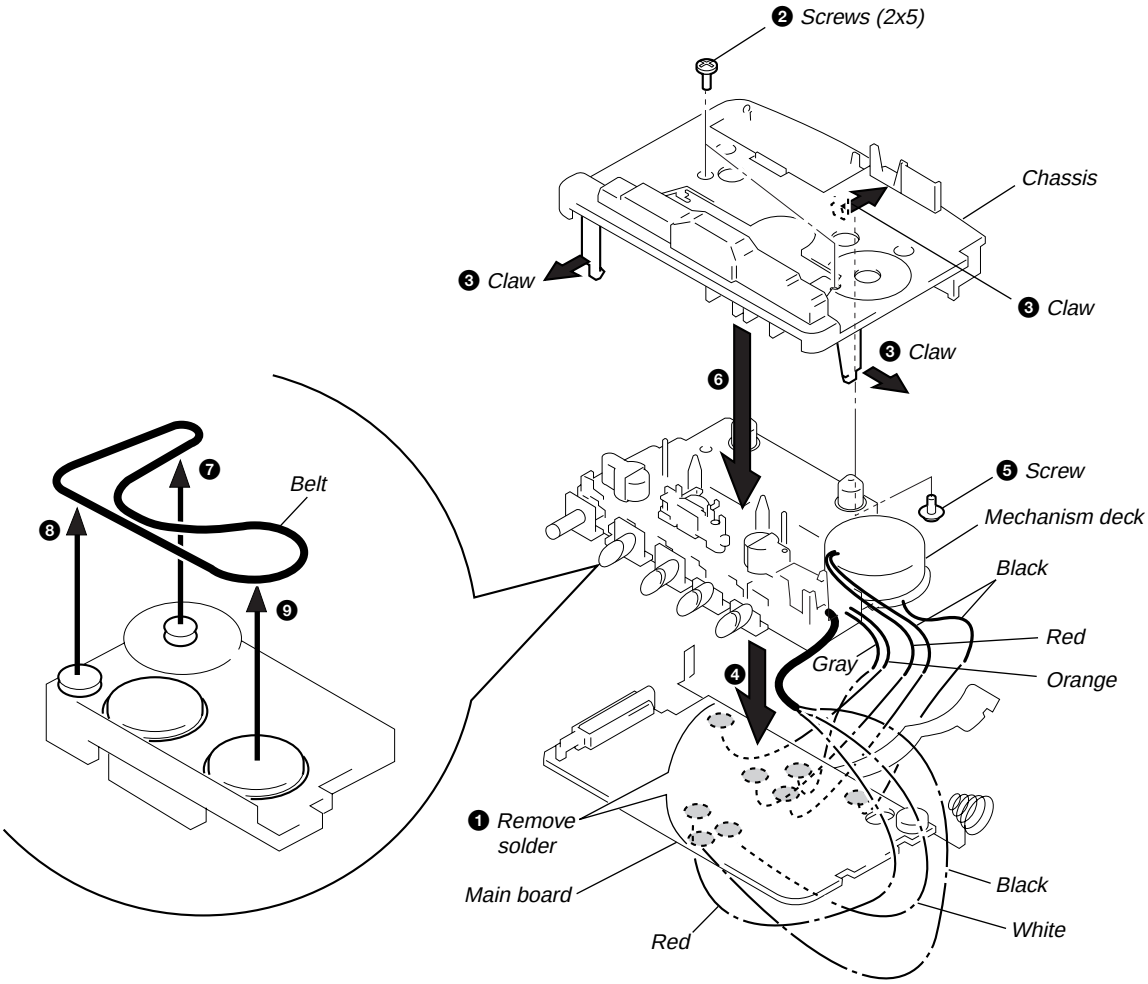
3-3. CASSETTE LID ASSY REMOVAL



3-4. CHASSIS SECTION, HEADPHONE JACK BOARD REMOVAL



3-5. MECHANISM DECK, MAIN BOARD, BELT REMOVAL



SECTION 4
ADJUSTMENTS

4-1. MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
   playback head, pinch roller
   capstan, rubber belt
2. Demagnetize the playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage (2.5 V) unless otherwise noted.

Torque Measurement

Mode	Torque Meter	Meter Reading
FWD	CQ-102C	20 - 42 g • cm (0.28 -0.58 oz• inch)
FWD back tension		less than 2 g • cm (less than 0.03 oz• inch)
REV	CQ-102RC	20 - 42 g • cm (0.28 -0.58 oz• inch)
REV back tension		less than 2 g • cm (less than 0.03 oz• inch)
FF, REW	CQ-201B	more than 60 g • cm (more than 0.83 oz• inch)

4-2. ELECTRICAL ADJUSTMENTS

PRECAUTION

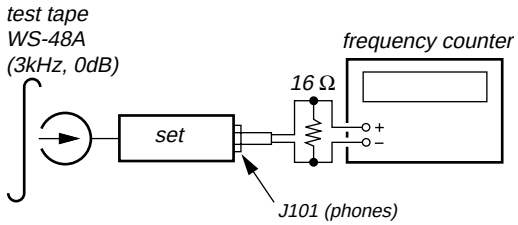
- Supplied voltage: 2.5V.
- Switch and control position
  SET switch : NORM
  VOLUME control : maximum
  MENU switch : NORM

Test Tape

Type	Signal	Used for
WS-48A	3kHz, 0dB	Tape Speed Adjustment

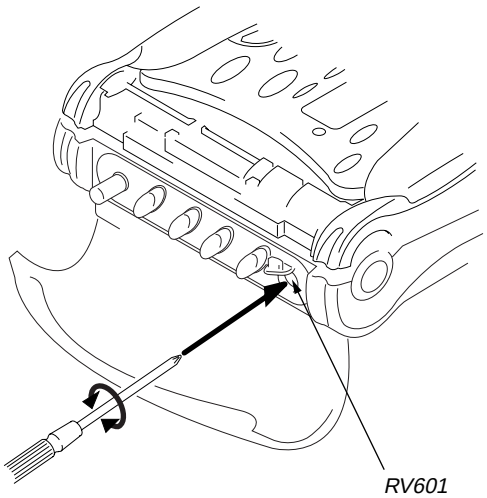
Tape Speed Adjustment

Procedure :



1. Playback WS-48A (tape center part) in the REV state and adjust RV601 so that the frequency counter reading becomes 2,990Hz – 3,010Hz.
2. Playback WS-48A (tape center) in the FWD state. Check that frequency counter reading is within 1.5% of the reading of step 1.

Adjustment Location :

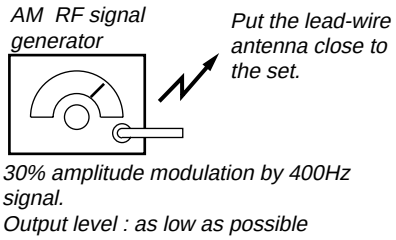


TUNER SECTION

no mark : COM
< > : AEP, E model only

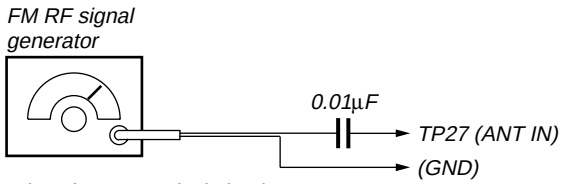
AM Section

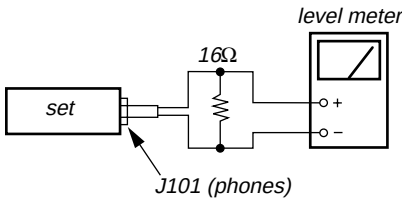
BAND : AM


AM RF signal generator
Put the lead-wire antenna close to the set.
30% amplitude modulation by 400Hz signal.
Output level : as low as possible

FM Section

BAND : FM





* Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

AM IF ALIGNMENT	
Adjust for a maximum reading on level meter.	
T1	450kHz

AM FREQUENCY COVERAGE ADJUSTMENT		
Adjust part	Frequency display	Reading on digital voltmeter.
T2	530kHz < 531kHz>	1.25 – 1.35V
Confirmation	1,710kHz	less than 10V

AM TRACKING ADJUSTMENT	
Adjust for a maximum reading on level meter.	
L1	620kHz < 621kHz>
CT1	1,400kHz< 1,395kHz>

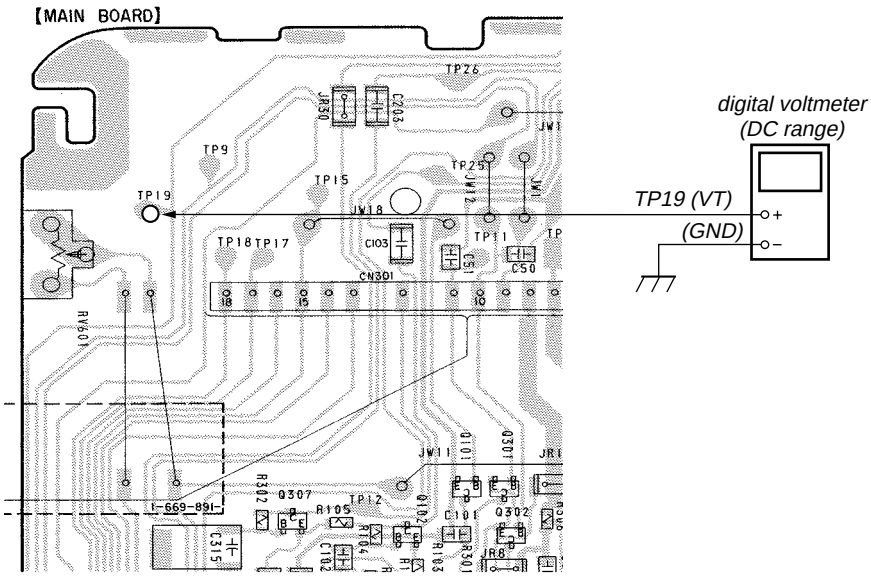
FM FREQUENCY COVERAGE ADJUSTMENT		
Adjust part	Frequency display	Reading on digital voltmeter.
L3	87.5MHz	3.7 – 3.9V
Confirmation	108MHz	less than 10V

FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on level meter.	
L2	87.5MHz
Confirmation	108MHz

Frequency Coverage Adjustment

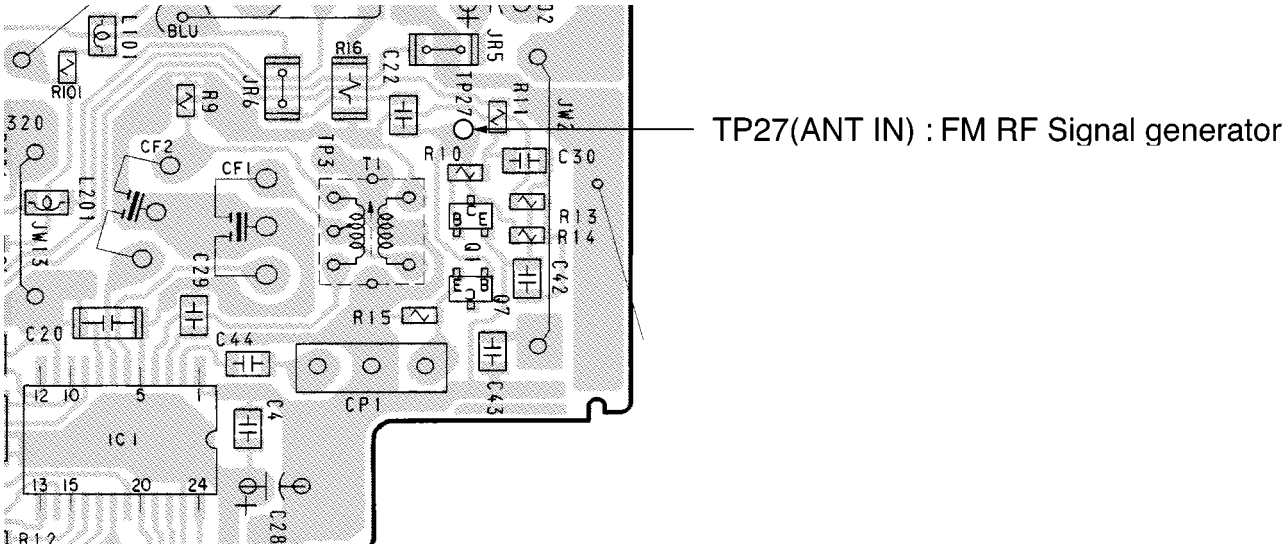
Setting :

[MAIN BOARD] (Conductor side)



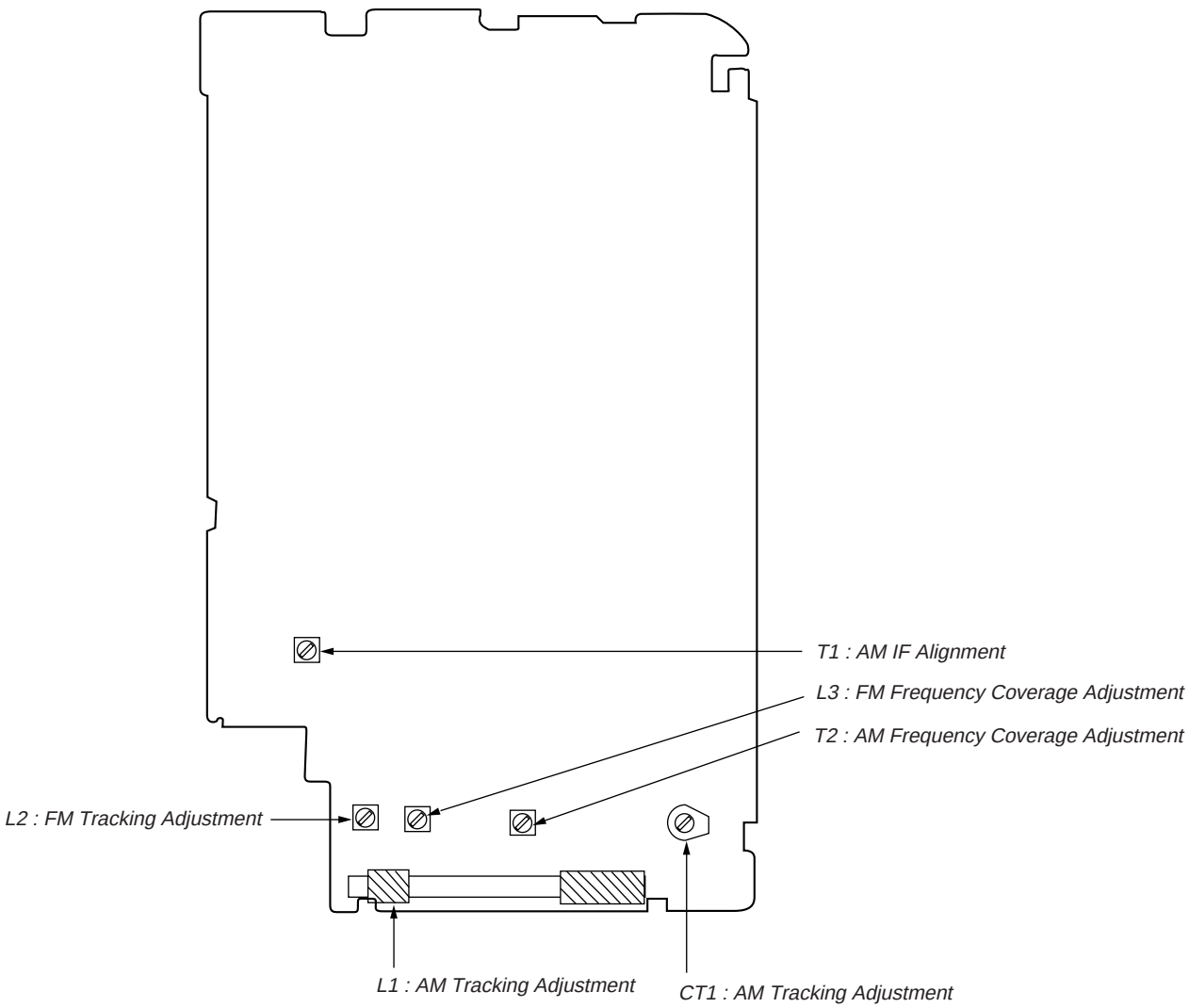
Connection Point :

[MAIN BOARD] (Component side)



Adjustment Location :

[MAIN BOARD] (Conductor Side)


T1 : AM IF Alignment
L3 : FM Frequency Coverage Adjustment
T2 : AM Frequency Coverage Adjustment
L2 : FM Tracking Adjustment
L1 : AM Tracking Adjustment
CT1 : AM Tracking Adjustment

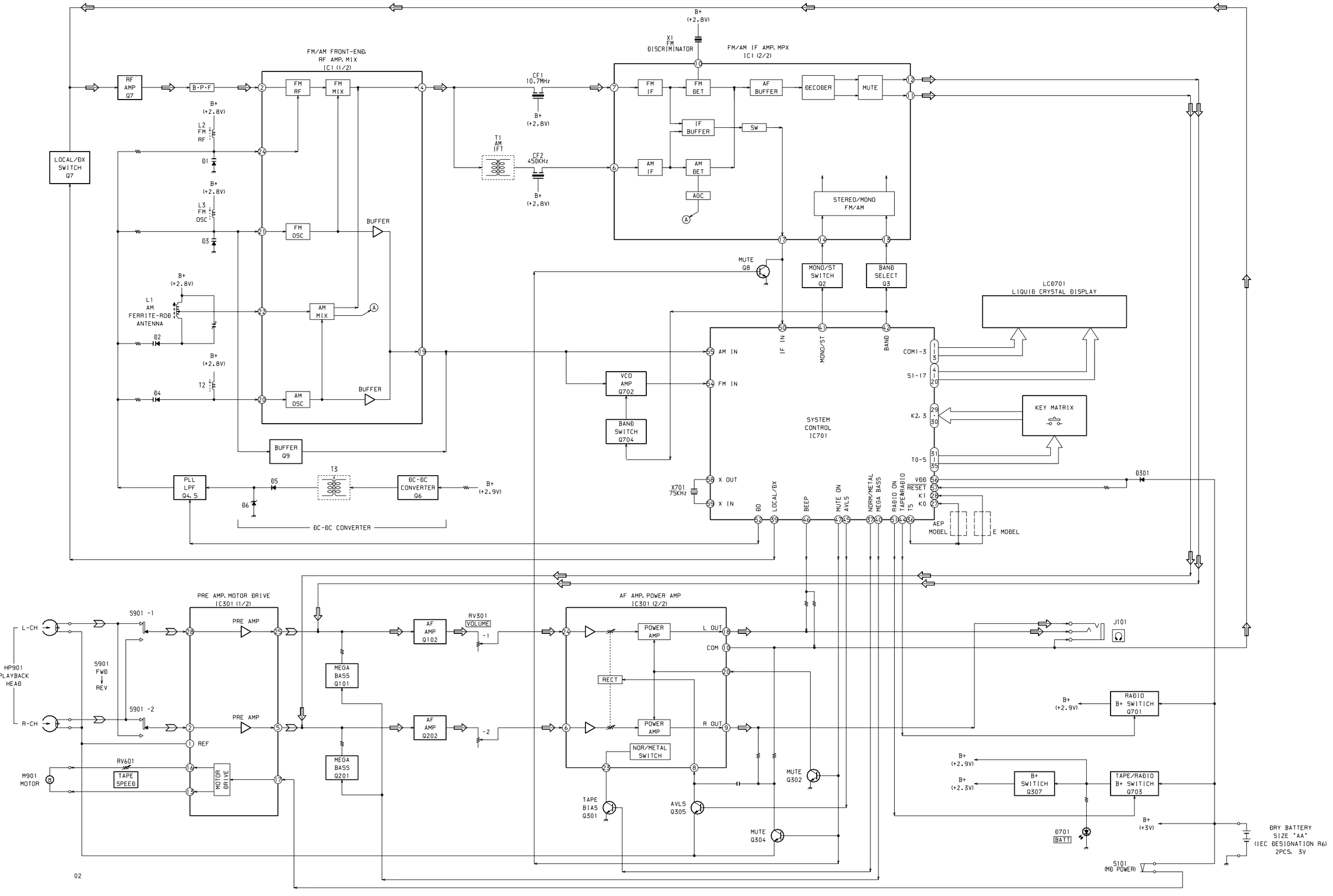
SECTION 5
DIAGRAMS

5-1. EXPLANATION OF IC TERMINALS

IC701 TC9322FB-603 (LCD DRIVE/SYSTEM CONTROL)

Pin No.	Pin name	I/O	Description
1 – 3	COM1 – COM3	O	Common output terminal.
4 – 20	S1 – S17	O	Segment output terminal.
21 – 26	KR0 – KR5	O	Key return timing output terminal.
27 – 30	K0 – K3	I	Key input.
31 – 36	T0 – T5	O	Key return timing output.
37	NOM/METAL	O	Tape normal/metal selection output.
38	TAPE ON	I	Tape power (MD power) ON Det terminal.
39	LOCAL/DX	O	Local/DX selection output.
40	MEGA BASS	O	Mega bass ON/OFF control output.
41	MONO/ST	O	Mono/Stereo selection output.
42	BAND	O	FM/AM band selection output.
43		I	Power initial terminal.
44	TAPE & RADIO	O	Tape & Radio +B ON/OFF control.
45	AVLS	O	AVLS control terminal.
46	BEEP	O	Beep signal output terminal.
47	MUTE ON	O	Mute signal output terminal. H : Mute ON
48	TEST	I	Test terminal (Connected to ground).
49	$\overline{\text{HOLD}}$	I	Hold detection terminal.
50	IF IN	I	IF input terminal.
51	RADIO ON	O	Radio +B ON/OFF control.
52	DO	O	PLL error signal output.
53	GND	–	Ground.
54	FM IN	I	FM local oscillator input terminal.
55	AM IN	I	AM local oscillator input terminal.
56	VDD	–	Power supply terminal (+2.8V).
57	$\overline{\text{RESET}}$	I	System reset terminal. L : Reset
58	X OUT	O	Crystal oscillator terminal (75kHz).
59	X IN	I	Crystal oscillator terminal (75kHz).
60	VXT	–	Terminal to which external capacitor for stabilization of crystal oscillator power supply is connected.
61	VLCD	–	LCD drive power supply set-up terminal.
62	C1	–	LCD drive power supply set-up terminal.
63	C2	–	LCD drive power supply set-up terminal.
64	VEE	–	1.5V constant voltage power supply terminal for LCD drive.

5-2. BLOCK DIAGRAM

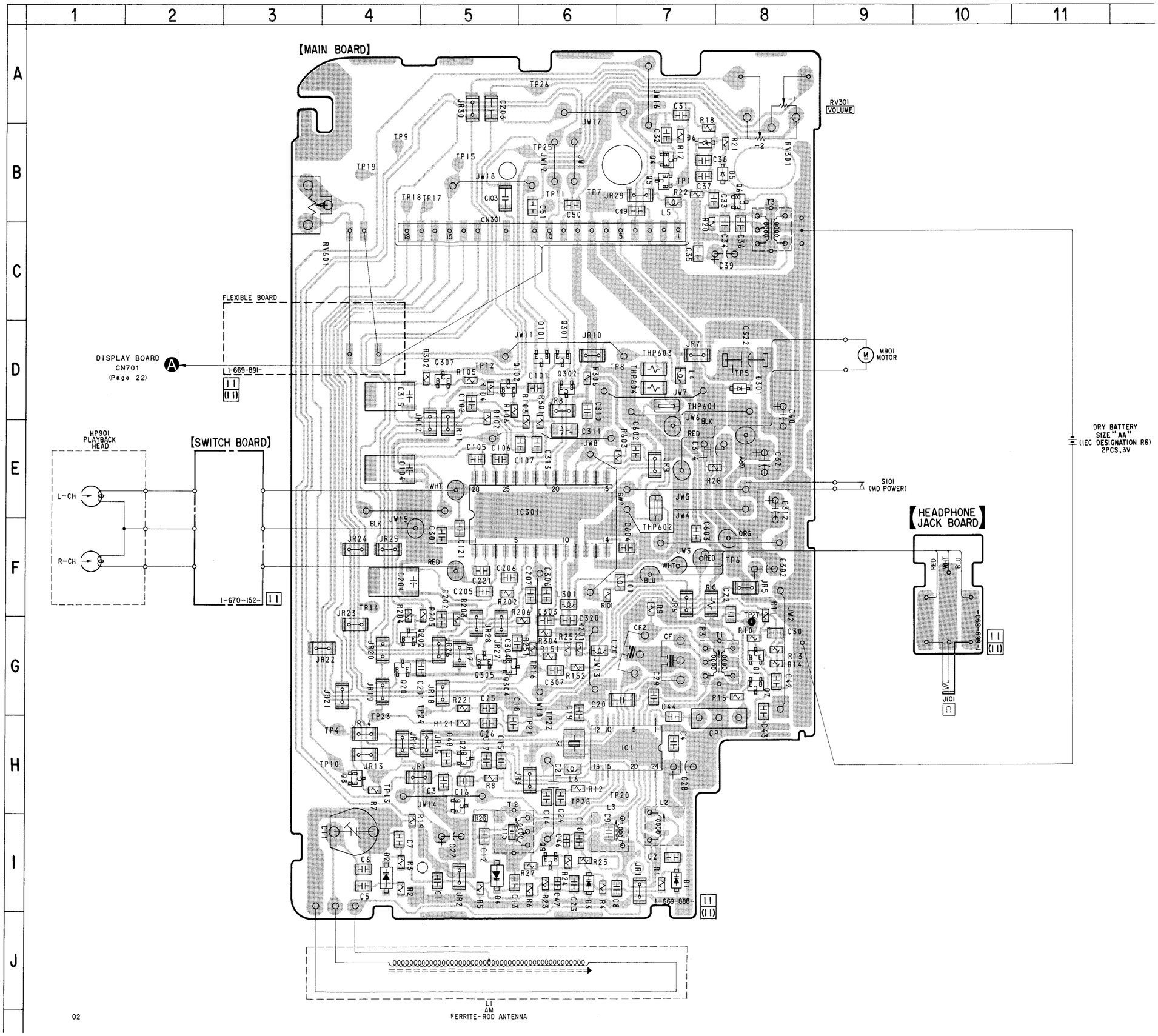


• Signal path.
⇨ : FM
⇨ : PB

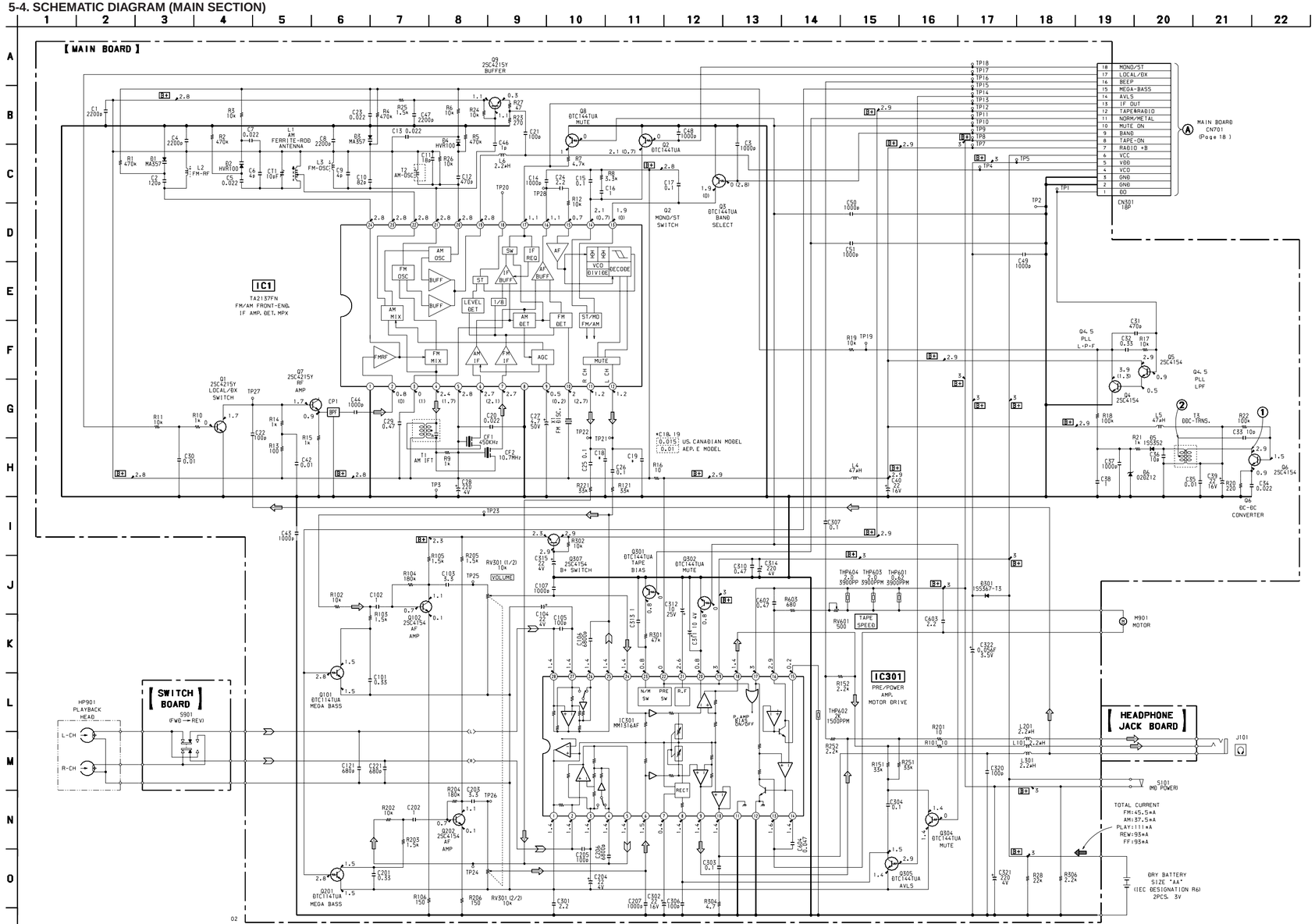
5-3. PRINTED WIRING BOARDS (MAIN SECTION)

- **SEMICONDUCTOR LOCATION**

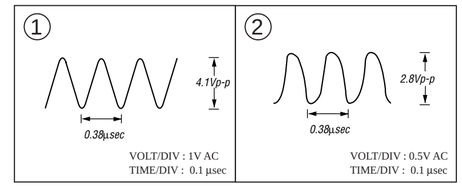
Ref. No.	Location
D1	I-7
D2	I-4
D3	I-6
D4	I-5
D5	B-8
D6	B-7
D301	D-8
IC1	H-7
IC301	E-6
Q1	G-8
Q2	H-5
Q3	H-5
Q4	B-7
Q5	B-7
Q6	B-8
Q7	G-8
Q8	H-4
Q9	I-6
Q101	D-6
Q102	D-5
Q201	G-4
Q202	G-4
Q301	D-6
Q302	D-6
Q304	G-5
Q305	G-5
Q307	D-5



Note:
- ○—— : parts extracted from the component side.
- ▒▒▒ : Pattern from the side which is seen.

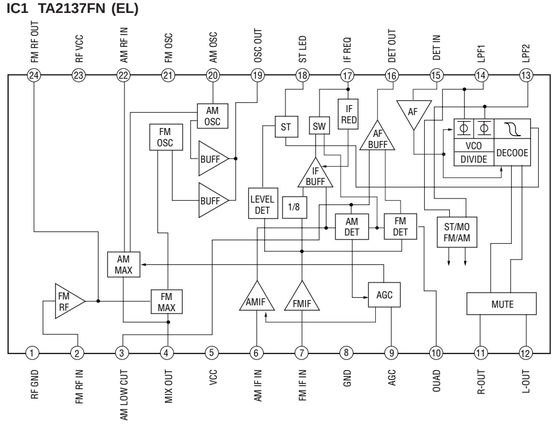


● WAVEFORMS



● IC BLOCK DIAGRAM

IC1 TA2137FN (EL)

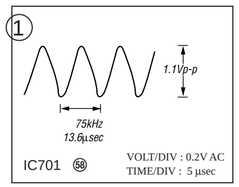


Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.
- B+ : B+ Line.
- ▬ : adjustment for repair.
- Power voltage is dc 3 V and fed with regulated dc power supply from battery terminal.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- Voltages and waveforms are dc with respect to ground in playback mode.
  no mark : FM (RADIO SECTION)
  PLAY (TAPE SECTION)
  ( ) : AM
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : FM
  ⇨ : PB

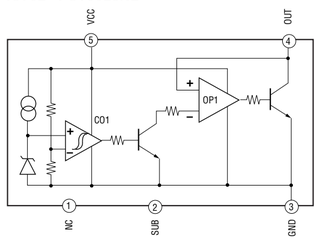
5-5. SCHEMATIC DIAGRAM (DISPLAY SECTION)

● WAVEFORM



● IC BLOCK DIAGRAM

IC702 PST9018NL



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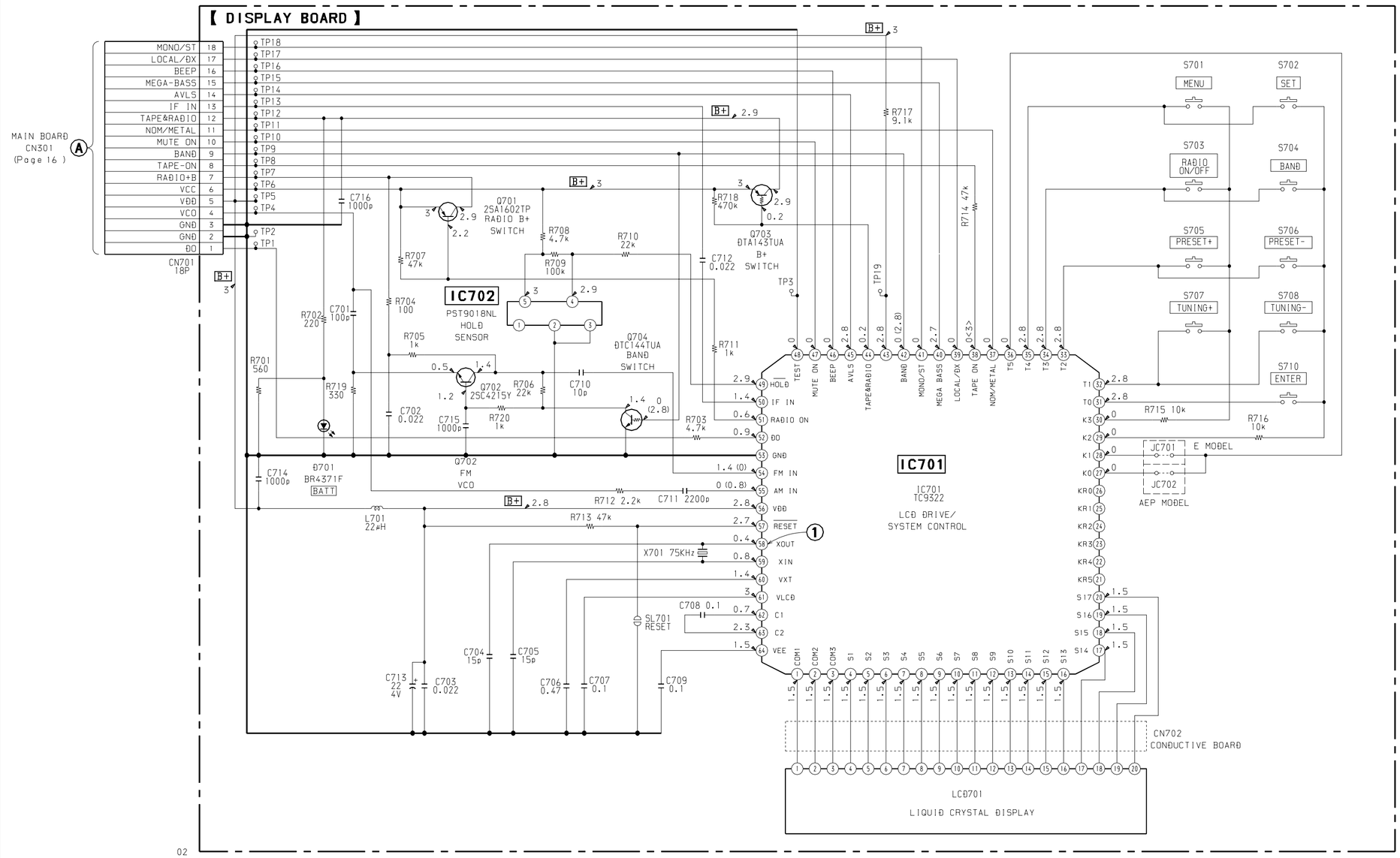
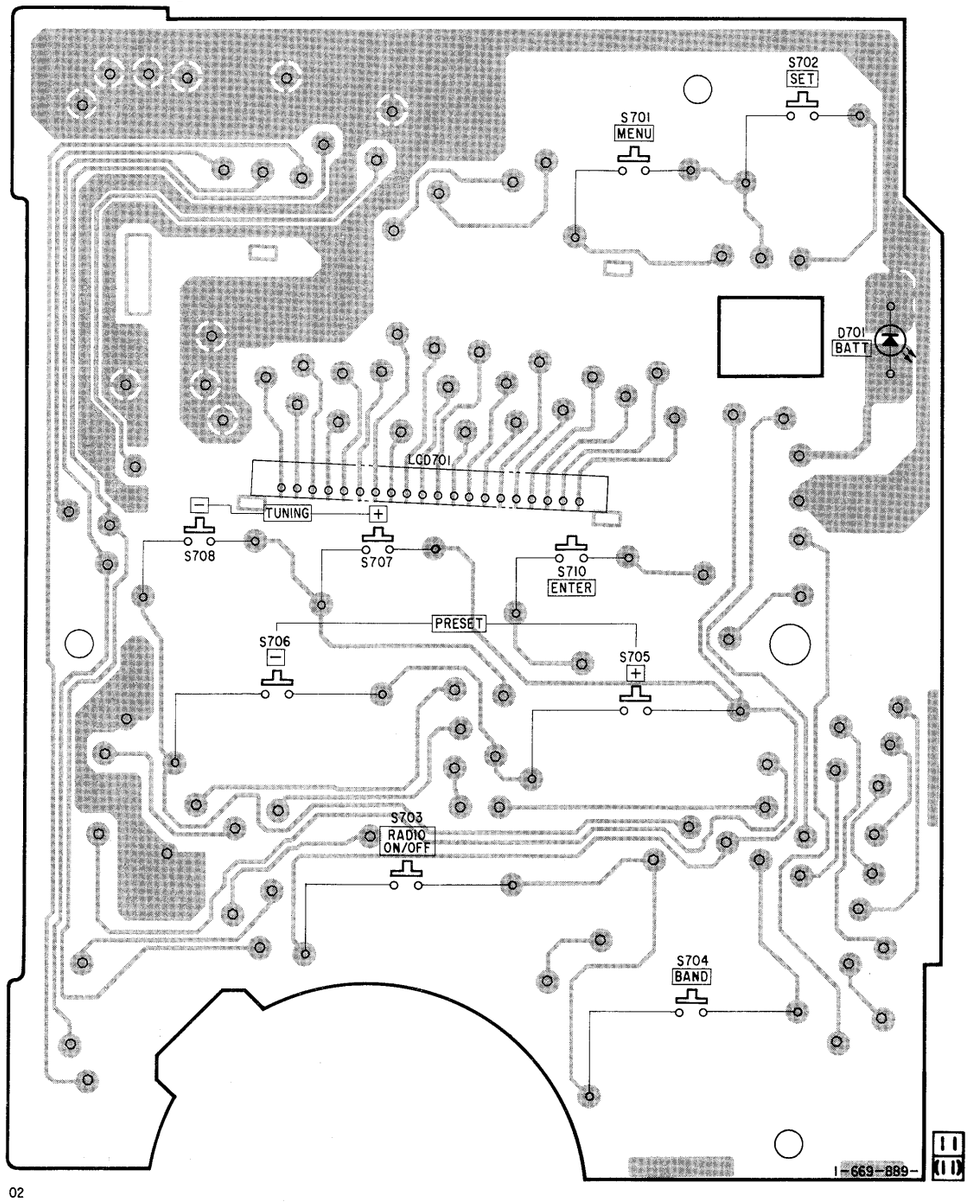
- Circled numbers refer to waveforms.

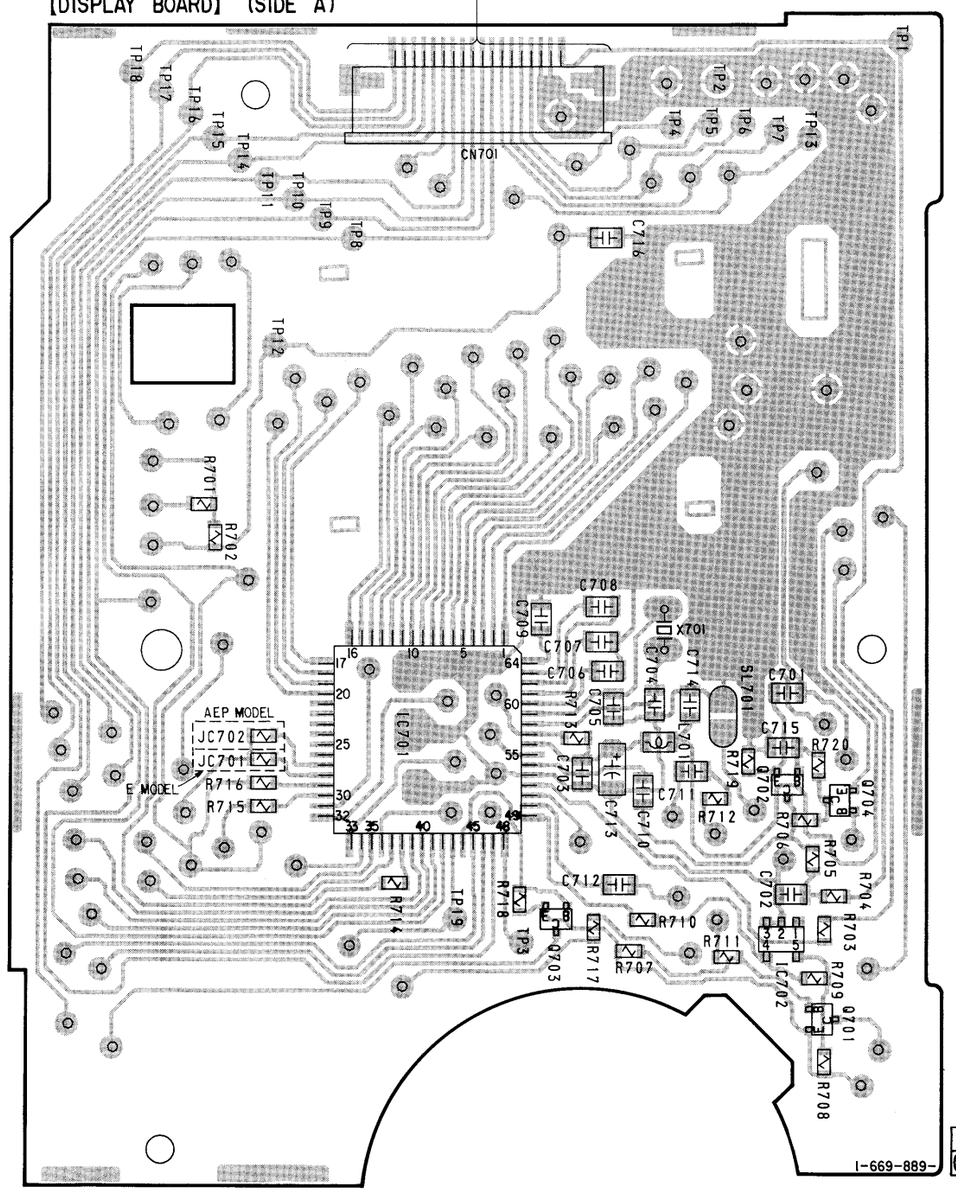


5-6. PRINTED WIRING BOARDS (DISPLAY SECTION)

【DISPLAY BOARD】 (SIDE B)



【DISPLAY BOARD】 (SIDE A)



- **SEMICONDUCTOR LOCATION**

Ref. No.	Location
D701	C-5
IC701	E-8
IC702	F-10
Q701	F-10
Q702	E-10
Q703	F-9
Q704	E-10

Note:

- ○—— : parts extracted from the component side.
- ○ : Through hole.
- ▒▒ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

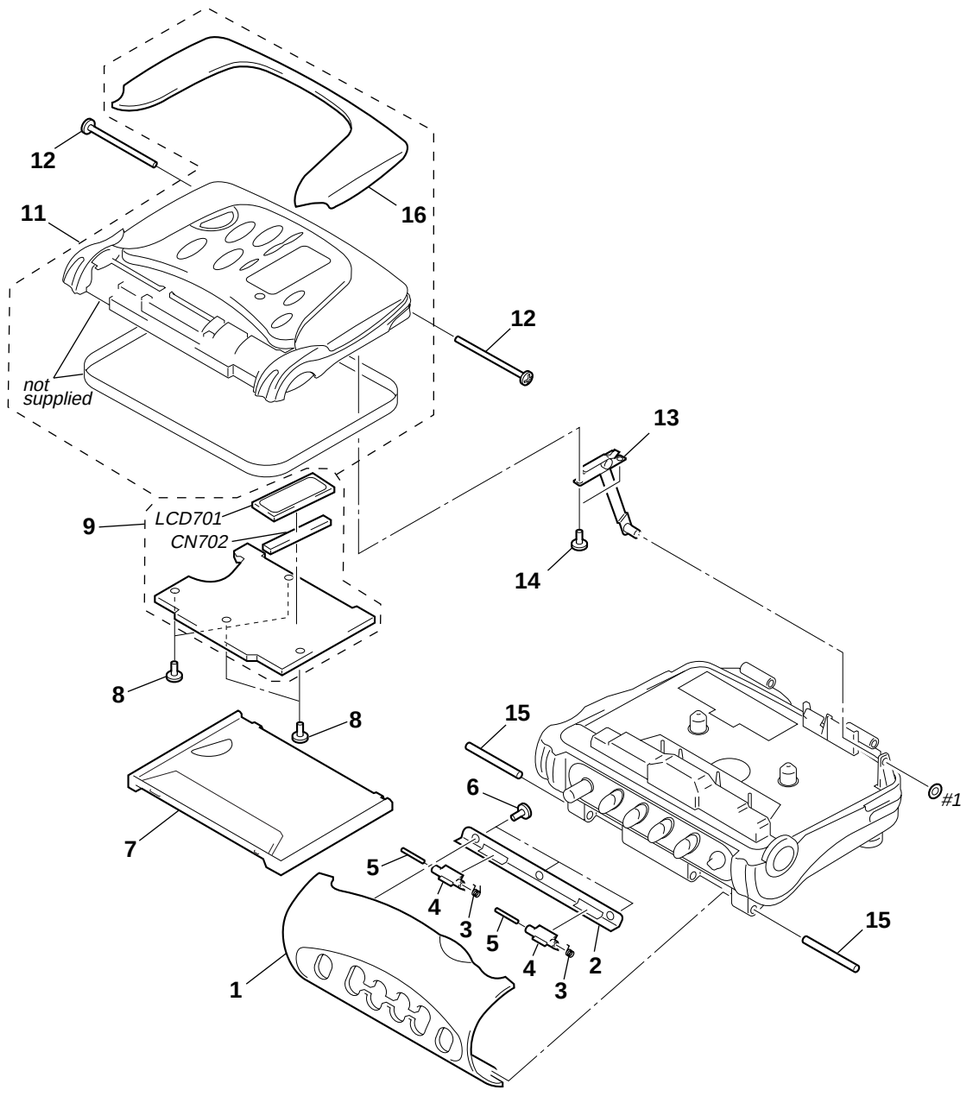
Caution:	
Pattern face side: (Side B)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A)	Parts on the parts face side seen from the parts face are indicated.

SECTION 6
EXPLODED VIEWS

NOTE :

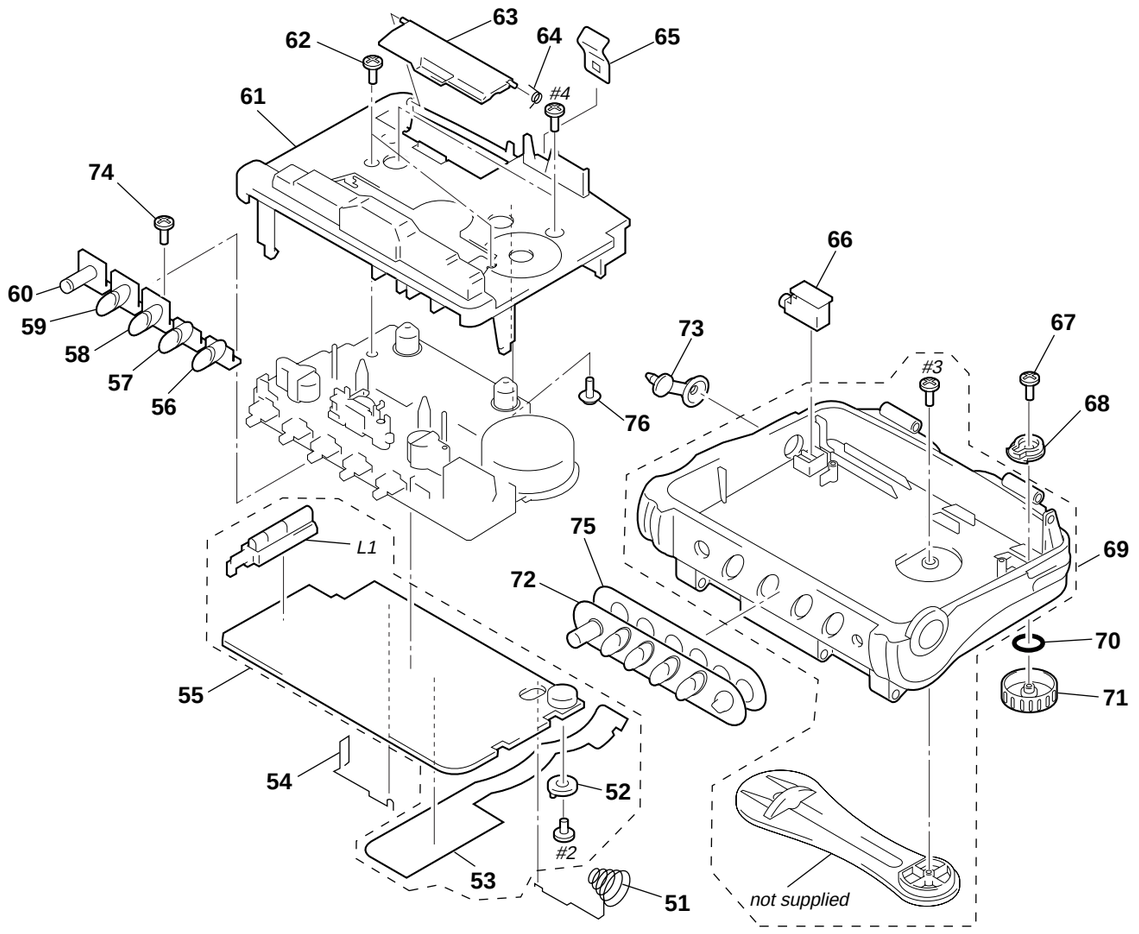
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

6-1. CASSETTE LID SECTION



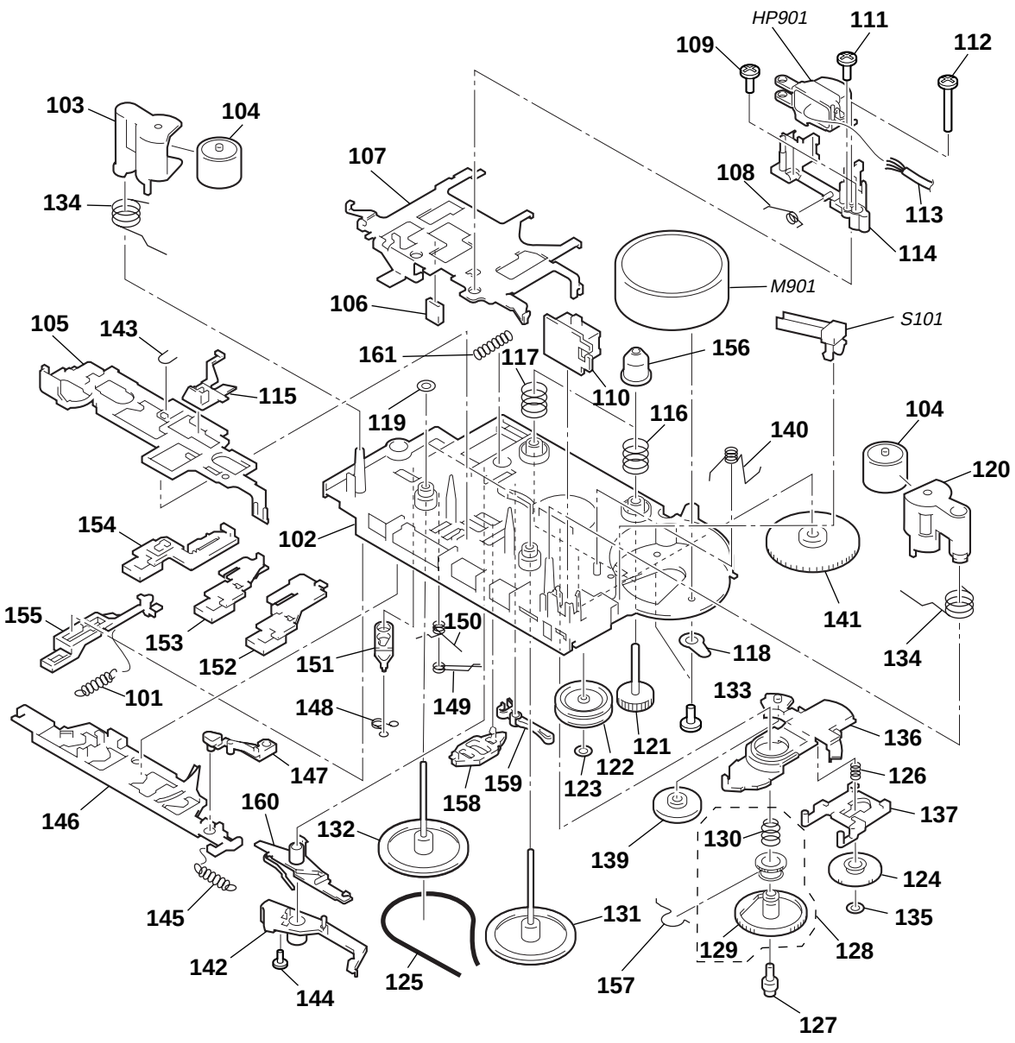
Ref. No.	Part No.	Description	Remark
1	3-024-917-01	BUCKLE	
2	3-024-918-01	PLATE, BUCKLE	
3	3-024-930-01	SPRING (LOCK)	
4	3-024-929-01	LEVER (LOCK)	
5	3-026-912-01	SHAFT (C)	
6	3-375-114-71	SCREW	
7	3-024-907-01	COVER	
8	3-375-114-41	SCREW	
9	A-3021-087-A	DISPLAY BOARD, COMPLETE (US, Canadian)	
9	A-3021-092-A	DISPLAY BOARD, COMPLETE (E)	
9	A-3021-090-A	DISPLAY BOARD, COMPLETE (AEP)	
11	X-3375-540-1	LID ASSY, CASSETTE	
12	3-386-373-01	SCREW, TAPPING	
13	X-3375-542-1	ARM ASSY	
14	3-375-114-71	SCREW	
15	3-024-931-01	SHAFT (B)	
16	3-024-911-01	PLATE, ORNAMENTAL	
* CN702	1-694-428-11	CONDUCTIVE BOARD, PRESSURE WEL	
LCD701	1-803-131-11	DISPLAY PANEL, LIQUID CRYSTAL	

6-2. MAIN BOARD SECTION



Ref. No.	Part No.	Description	Remark
51	3-024-926-01	TERMINAL (M), BATTERY	
52	3-934-023-01	JOINT (VOL)	
53	1-669-891-11	FLEXIBLE BOARD	
54	3-024-925-01	TERMINAL (P), BATTERY	
55	A-3021-088-A	MAIN BOARD, COMPLETE (US, Canadian)	
55	A-3021-091-A	MAIN BOARD, COMPLETE (AEP,E)	
56	3-024-922-01	BUTTON (FF)	
57	3-024-923-01	BUTTON (REW)	
58	3-024-920-01	BUTTON (PLAY)	
59	3-024-921-01	BUTTON (STOP)	
60	3-024-924-01	BUTTON (DIR)	
61	3-024-919-01	CHASSIS	
62	3-383-671-01	SCREW (2X5)	
63	3-934-020-41	LID, BATTERY CASE	
64	3-028-087-01	SPRING, TORSION	
65	3-351-153-01	SPRING	
* 66	1-669-890-11	HEADPHONE JACK BOARD	
67	3-381-629-11	SCREW	
68	3-934-024-01	JOINT (VOL.B)	
69	X-3375-539-1	CABINET (REAR) ASSY (AEP)	
69	X-3375-541-1	CABINET (REAR) ASSY (Canadian,E)	
69	X-3375-538-1	CABINET (REAR) ASSY (US)	
70	3-012-927-01	RING, O	
71	3-024-906-01	KNOB (VOL)	
72	3-024-914-01	PACKING (MD)	
73	3-386-371-01	PACKING, HP JACK	
74	3-029-161-01	SCREW	
* 75	3-024-915-01	SHEET (MD), ADHESIVE	
76	3-389-713-01	SCREW (2X4)	
L1	1-754-005-11	ANTENNA, FERRITE-ROD	

6-3. MECHANISM DECK SECTION (MF-WMFS473)



Ref. No.	Part No.	Description	Remark
101	3-025-064-01	SPRING (DIR)	
102	X-3375-574-1	CHASSIS ASSY	
103	3-025-074-01	ARM PINCH R	
104	3-905-717-01	PINCH ROLLER (R)	
105	3-025-065-01	SLIDE PLATE	
106	3-381-858-01	CAP (H)	
107	3-025-069-01	CHASSIS (HEAD)	
108	3-025-072-01	UD SPRING	
109	3-025-068-01	SCREW (HEAD)	
110	1-670-152-11	SWITCH BOARD	
111	3-025-070-01	UD SCREW AF	
112	3-025-071-01	UD SCREW AR	
113	1-783-606-11	LEAD, HEAD	
114	3-025-067-01	TAPE GUIDE	
115	3-025-066-01	SUB SLIDE	
116	3-905-722-01	SPRING (T REEL)	
117	3-905-723-01	SPRING (S REEL)	
118	3-027-644-01	LUG	
119	3-025-055-01	WASHER (FWF STOPPER)	
120	3-381-850-01	ARM (PINCH) (F)	
121	3-025-052-01	GEAR (REEL)	
122	3-025-058-01	PULLEY (IDLER)	
123	3-905-702-01	WASHER (IDLER)	
124	3-025-051-01	GEAR (TU)	
125	3-025-059-01	BELT	
126	3-025-054-01	SPRING (UPPER&LOWER)	
127	3-905-712-01	SCREW (CLUTCH)	
128	X-3375-990-1	CLUTCH ASSY	
129	3-381-841-01	GEAR (CAM)	
130	3-027-722-01	SPRING (CLUTCH)	
131	3-025-056-01	FW (F) ASSY	
132	3-025-057-01	FW (R) ASSY	

Ref. No.	Part No.	Description	Remark
133	3-381-883-01	SCREW (MOTOR)	
134	3-025-073-01	SPRING	
135	3-025-060-01	WASHER (UPPER&LOWER)	
136	3-905-710-01	ARM (TU)	
137	3-025-053-01	LEVER (WEDGE)	
139	3-025-050-01	GEAR (IDLER) (B)	
140	3-025-063-01	SPRING	
141	3-381-840-01	GEAR (IDLER) (A)	
142	3-025-062-01	ARM (CHANGE)	
143	3-025-076-01	SPRING CHANGE	
144	3-025-075-01	SCREW	
145	3-905-694-01	SPRING (LOCK PLATE)	
146	3-905-708-01	PLATE, LOCK	
147	3-905-700-01	ARM (SWITCH) (B)	
148	3-905-699-01	SPRING (REVERSE)	
149	3-381-874-01	SPRING (TU)	
150	3-905-697-01	SPRING (CANCEL)	
151	3-905-698-01	ARM (SWITCH)	
152	3-905-724-01	LEVER (FF)	
153	3-905-725-01	LEVER (REW)	
154	3-905-726-01	LEVER (STOP)	
155	3-905-727-01	LEVER (DIR)	
156	3-381-859-01	CAP (REEL)	
157	3-905-711-01	SPRING (SENSOR)	
158	3-905-716-01	ARM (CANCEL) (R)	
159	3-905-713-01	ARM (SENSOR)	
160	3-905-715-02	ARM (CANCEL) (D)	
161	3-905-721-01	SPRING (CHASSIS HEAD)	
HP901	1-500-534-11	HEAD (PLAYBACK)	
M901	X-3375-573-1	MOTOR ASSY	
S101	1-692-302-11	SWITCH, LEAF (MD POWER)	

SECTION 7
ELECTRICAL PARTS LIST

DISPLAY

HEADPHONE JACK

When indicating parts by reference number, please include the board.

NOTE :

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE :Metal oxide-film resistor
  F : nonflammable
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : µ , for example :
  uA.... : µ A.... , uPA.... : µ PA....
  uPB.... : µ PB.... , uPC.... : µ PC....
  uPD.... : µ PD....
- CAPACITORS
  uF : µ F
- COILS
  uH : µ H
- Abbreviation
  CND : Canadian

Ref. No.	Part No.	Description			Remark
	A-3021-087-A	DISPLAY BOARD, COMPLETE (US, CND)			
	A-3021-090-A	DISPLAY BOARD, COMPLETE (AEP)			
	A-3021-092-A	DISPLAY BOARD, COMPLETE (E)			
		*************************			
		< CAPACITOR >			
C701	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C702	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C703	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C704	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C705	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C706	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C707	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C708	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C709	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C710	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C711	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C712	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C713	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C714	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C715	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C716	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
		< CONNECTOR >			
CN701	1-784-906-21	CONNECTOR, FPC (ZIF) 18P			
* CN702	1-694-428-11	CONDUCTIVE BOARD, PRESSURE WEL			
		< DIODE >			
D701	8-719-984-02	LED BR4371F (BATT)			
		< IC >			
IC701	8-759-530-98	IC TC9322FB-603			
IC702	8-759-296-60	IC PST9018NL			
		< JUMPER RESISTOR >			
JC701	1-216-864-11	METAL CHIP	0	5%	1/16W (E)
JC702	1-216-864-11	METAL CHIP	0	5%	1/16W (AEP)
		< COIL >			
L701	1-412-010-41	INDUCTOR CHIP	22uH		

Ref. No.	Part No.	Description			Remark
		< LIQUID CRYSTAL DISPLAY >			
LCD701	1-803-131-11	DISPLAY PANEL, LIQUID CRYSTAL			
		< TRANSISTOR >			
Q701	8-729-602-36	TRANSISTOR 2SA1602			
Q702	8-729-230-38	TRANSISTOR 2SC4215Y			
Q703	8-729-028-87	TRANSISTOR DTA143TUA-T106			
Q704	8-729-029-15	TRANSISTOR DTC144TUA-T106			
		< RESISTOR >			
R701	1-216-818-11	METAL CHIP	560	5%	1/16W
R702	1-216-813-11	METAL CHIP	220	5%	1/16W
R703	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R704	1-216-809-11	METAL CHIP	100	5%	1/16W
R705	1-216-821-11	METAL CHIP	1K	5%	1/16W
R706	1-216-837-11	METAL CHIP	22K	5%	1/16W
R707	1-216-841-11	METAL CHIP	47K	5%	1/16W
R708	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R709	1-216-845-11	METAL CHIP	100K	5%	1/16W
R710	1-216-837-11	METAL CHIP	22K	5%	1/16W
R711	1-216-821-11	METAL CHIP	1K	5%	1/16W
R712	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R713	1-216-841-11	METAL CHIP	47K	5%	1/16W
R714	1-216-841-11	METAL CHIP	47K	5%	1/16W
R715	1-216-833-11	METAL CHIP	10K	5%	1/16W
R716	1-216-833-11	METAL CHIP	10K	5%	1/16W
R717	1-218-345-11	RES,CHIP	9.1K	5%	1/16W
R718	1-216-853-11	METAL CHIP	470K	5%	1/16W
R719	1-216-815-11	METAL CHIP	330	5%	1/16W
R720	1-216-821-11	METAL CHIP	1K	5%	1/16W
		< VIBRATOR >			
X701	1-579-615-11	VIBRATOR, CRYSTAL (75kHz)			
**********					
*	1-669-890-11	HEADPHONE JACK BOARD			
		**********			
		< JACK >			
J101	1-565-376-11	JACK (🎧)			
**********					

MAIN

Ref. No.	Part No.	Description			Remark
	A-3021-088-A	MAIN BOARD, COMPLETE (US, CND)			
	A-3021-091-A	MAIN BOARD, COMPLETE (AEP,E)			
		**********			
	1-669-891-11	FLEXIBLE BOARD			
	3-934-023-01	JOINT (VOL)			
	7-627-850-67	SCREW,PRECISION +P 1.4X4			
		< CAPACITOR >			
C1	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C2	1-163-253-11	CERAMIC CHIP	120PF	5%	50V
C3	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C4	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C5	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C6	1-163-087-00	CERAMIC CHIP	4PF		50V
C7	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C8	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C9	1-163-087-00	CERAMIC CHIP	4PF		50V
C10	1-163-249-11	CERAMIC CHIP	82PF	5%	50V
C11	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C12	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C13	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C14	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C15	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C16	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C17	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C18	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (AEP,E)
C18	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V (US,CND)
C19	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (AEP,E)
C19	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V (US,CND)
C20	1-104-847-11	TANTAL CHIP	22uF	20%	4V
C21	1-162-282-31	CERAMIC	100PF	10%	50V
C22	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C23	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C24	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C25	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C26	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C27	1-104-394-11	ELECT	4.7uF	20%	50V
C28	1-124-434-00	ELECT	220uF	20%	4V
C29	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C30	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C31	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C32	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V
C33	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C34	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C35	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C36	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C37	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C38	1-164-346-11	CERAMIC CHIP	1uF		16V
C39	1-104-369-11	ELECT	22uF	20%	16V
C40	1-104-369-11	ELECT	22uF	20%	16V
C42	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C43	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C44	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V

Ref. No.	Part No.	Description			Remark
C46	1-162-905-11	CERAMIC CHIP	1PF	0.25PF	50V
C47	1-164-676-11	CERAMIC CHIP	2200PF	5%	16V
C48	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C49	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C50	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C51	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C101	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V
C102	1-164-346-11	CERAMIC CHIP	1uF		16V
C103	1-164-821-11	CERAMIC CHIP	3.3uF	10%	16V
C104	1-128-015-11	ELECT CHIP	22uF	20%	4V
C105	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C106	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C107	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C121	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C201	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V
C202	1-164-346-11	CERAMIC CHIP	1uF		16V
C203	1-164-821-11	CERAMIC CHIP	3.3uF	10%	16V
C204	1-128-015-11	ELECT CHIP	22uF	20%	4V
C205	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C206	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C207	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C221	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C301	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C302	1-104-369-11	ELECT	22uF	20%	16V
C303	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C304	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C306	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C307	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C310	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C311	1-135-201-11	TANTAL CHIP	10uF	20%	4V
C312	1-104-396-11	ELECT	10uF	20%	25V
C313	1-164-346-11	CERAMIC CHIP	1uF		16V
C314	1-124-434-00	ELECT	220uF	20%	4V
C315	1-128-015-11	ELECT CHIP	22uF	20%	4V
C320	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C321	1-124-434-00	ELECT	220uF	20%	4V
C322	1-125-639-11	DOUBLE LAYER	56000uF		3.5V
C602	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C603	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C604	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
		< FILTER >			
CF1	1-767-047-11	FILTER, CERAMIC			
CF2	1-567-198-11	FILTER, CERAMIC			
		< COMPOSITION CIRCUIT BLOCK >			
CP1	1-236-711-41	FILTER, BAND PASS			
		< TRIMMER >			
CT1	1-141-304-21	CAP, TRIMMER	10PF		
		< DIODE >			
D1	8-719-053-30	DIODE MA2S357-(TX). SO			
D2	8-719-055-61	DIODE HVR100-9TRU			
D3	8-719-053-30	DIODE MA2S357-(TX). SO			
D4	8-719-055-61	DIODE HVR100-9TRU			
D5	8-719-016-74	DIODE 1SS352			

Ref. No.	Part No.	Description			Remark
D6	8-719-420-14	DIODE 02DZ12-TPH3			
D301	8-719-049-09	DIODE 1SS367-T3SONY			
		< IC >			
IC1	8-759-544-03	IC TA2137FN(EL)			
IC301	8-759-497-06	IC MM1316AFBE			
		< JUMPER RESISTOR >			
JR1	1-216-296-00	METAL CHIP	0	5%	1/8W
JR2	1-216-296-00	METAL CHIP	0	5%	1/8W
JR3	1-216-296-00	METAL CHIP	0	5%	1/8W
JR4	1-216-296-00	METAL CHIP	0	5%	1/8W
JR5	1-216-296-00	METAL CHIP	0	5%	1/8W
JR6	1-216-296-00	METAL CHIP	0	5%	1/8W
JR7	1-216-296-00	METAL CHIP	0	5%	1/8W
JR8	1-216-296-00	METAL CHIP	0	5%	1/8W
JR9	1-216-296-00	METAL CHIP	0	5%	1/8W
JR10	1-216-296-00	METAL CHIP	0	5%	1/8W
JR11	1-216-296-00	METAL CHIP	0	5%	1/8W
JR12	1-216-296-00	METAL CHIP	0	5%	1/8W
JR13	1-216-296-00	METAL CHIP	0	5%	1/8W
JR14	1-216-296-00	METAL CHIP	0	5%	1/8W
JR15	1-216-296-00	METAL CHIP	0	5%	1/8W
JR16	1-216-296-00	METAL CHIP	0	5%	1/8W
JR17	1-216-296-00	METAL CHIP	0	5%	1/8W
JR18	1-216-296-00	METAL CHIP	0	5%	1/8W
JR19	1-216-296-00	METAL CHIP	0	5%	1/8W
JR20	1-216-296-00	METAL CHIP	0	5%	1/8W
JR21	1-216-296-00	METAL CHIP	0	5%	1/8W
JR22	1-216-296-00	METAL CHIP	0	5%	1/8W
JR23	1-216-296-00	METAL CHIP	0	5%	1/8W
JR24	1-216-296-00	METAL CHIP	0	5%	1/8W
JR25	1-216-296-00	METAL CHIP	0	5%	1/8W
JR26	1-216-296-00	METAL CHIP	0	5%	1/8W
JR27	1-216-296-00	METAL CHIP	0	5%	1/8W
JR28	1-216-296-00	METAL CHIP	0	5%	1/8W
JR29	1-216-296-00	METAL CHIP	0	5%	1/8W
JR30	1-216-296-00	METAL CHIP	0	5%	1/8W
		< COIL >			
L1	1-754-005-11	ANTENNA, FERRITE-ROD (AM)			
L2	1-416-677-11	COIL (WITH CORE) (FM-RF)			
L3	1-416-678-11	COIL (WITH CORE) (FM-OSC)			
L4	1-414-196-41	INDUCTOR	47uH		
L5	1-414-196-41	INDUCTOR	47uH		
L6	1-410-997-31	INDUCTOR CHIP	2.2uH		
L101	1-410-997-31	INDUCTOR CHIP	2.2uH		
L201	1-410-997-31	INDUCTOR CHIP	2.2uH		
L301	1-410-997-31	INDUCTOR CHIP	2.2uH		
		< TRANSISTOR >			
Q1	8-729-230-38	TRANSISTOR 2SC4215Y			
Q2	8-729-029-15	TRANSISTOR DTC144TUA-T106			
Q3	8-729-029-15	TRANSISTOR DTC144TUA-T106			
Q4	8-729-602-21	TRANSISTOR 2SC4154-F			
Q5	8-729-602-21	TRANSISTOR 2SC4154-F			
Q6	8-729-602-21	TRANSISTOR 2SC4154-F			
Q7	8-729-230-38	TRANSISTOR 2SC4215Y			
Q8	8-729-029-15	TRANSISTOR DTC144TUA-T106			
Q9	8-729-230-38	TRANSISTOR 2SC4215Y			
Q101	8-729-028-97	TRANSISTOR DTC114TUA-T106			
Q102	8-729-602-21	TRANSISTOR 2SC4154-F			
Q201	8-729-028-97	TRANSISTOR DTC114TUA-T106			
Q202	8-729-602-21	TRANSISTOR 2SC4154-F			
Q301	8-729-029-15	TRANSISTOR DTC144TUA-T106			
Q302	8-729-029-15	TRANSISTOR DTC144TUA-T106			
Q304	8-729-029-15	TRANSISTOR DTC144TUA-T106			
Q305	8-729-029-15	TRANSISTOR DTC144TUA-T106			
Q307	8-729-602-21	TRANSISTOR 2SC4154-F			
		< RESISTOR >			
R1	1-216-853-11	METAL CHIP	470K	5%	1/16W
R2	1-216-853-11	METAL CHIP	470K	5%	1/16W
R3	1-216-833-11	METAL CHIP	10K	5%	1/16W
R4	1-216-853-11	METAL CHIP	470K	5%	1/16W
R5	1-216-853-11	METAL CHIP	470K	5%	1/16W
R6	1-216-833-11	METAL CHIP	10K	5%	1/16W
R7	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R8	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R9	1-216-821-11	METAL CHIP	1K	5%	1/16W
R10	1-216-821-11	METAL CHIP	1K	5%	1/16W
R11	1-216-833-11	METAL CHIP	10K	5%	1/16W
R12	1-216-833-11	METAL CHIP	10K	5%	1/16W
R13	1-216-809-11	METAL CHIP	100	5%	1/16W
R14	1-216-821-11	METAL CHIP	1K	5%	1/16W
R15	1-216-821-11	METAL CHIP	1K	5%	1/16W
R16	1-216-150-11	METAL CHIP	10	5%	1/8W
R17	1-216-833-11	METAL CHIP	10K	5%	1/16W
R18	1-216-845-11	METAL CHIP	100K	5%	1/16W
R19	1-216-833-11	METAL CHIP	10K	5%	1/16W
R20	1-216-813-11	METAL CHIP	220	5%	1/16W
R21	1-216-821-11	METAL CHIP	1K	5%	1/16W
R22	1-216-845-11	METAL CHIP	100K	5%	1/16W
R23	1-216-814-11	METAL CHIP	270	5%	1/16W
R24	1-216-833-11	METAL CHIP	10K	5%	1/16W
R25	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R26	1-216-833-11	METAL CHIP	10K	5%	1/16W
R27	1-216-805-11	METAL CHIP	47	5%	1/16W
R28	1-216-837-11	METAL CHIP	22K	5%	1/16W
R101	1-216-797-11	RES,CHIP	10	5%	1/16W
R102	1-216-833-11	METAL CHIP	10K	5%	1/16W
R103	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R104	1-216-848-11	METAL CHIP	180K	5%	1/16W
R105	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R106	1-216-811-11	METAL CHIP	150	5%	1/16W
R121	1-216-839-11	METAL CHIP	33K	5%	1/16W
R151	1-216-839-11	METAL CHIP	33K	5%	1/16W
R152	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R201	1-216-797-11	RES,CHIP	10	5%	1/16W
R202	1-216-833-11	METAL CHIP	10K	5%	1/16W
R203	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R204	1-216-848-11	METAL CHIP	180K	5%	1/16W
R205	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R206	1-216-811-11	METAL CHIP	150	5%	1/16W
R221	1-216-839-11	METAL CHIP	33K	5%	1/16W

MAIN SWITCH

Ref. No.	Part No.	Description			Remark
R251	1-216-839-11	METAL CHIP	33K	5%	1/16W
R252	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R301	1-216-841-11	METAL CHIP	47K	5%	1/16W
R302	1-216-833-11	METAL CHIP	10K	5%	1/16W
R304	1-216-793-11	RES,CHIP	4.7	5%	1/16W
R306	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R603	1-216-819-11	METAL CHIP	680	5%	1/16W
		< VARIABLE RESISTOR >			
RV301	1-230-593-11	RES, VAR, CARBON 10K/10K (VOLUME)			
RV601	1-238-594-11	RES, ADJ, CARBON 500 (TAPE SPEED)			
		< TRANSFORMER >			
T1	1-431-883-11	TRANSFORMER, IF (AM-IFT)			
T2	1-416-679-11	COIL, OSCILLATION (AM-OSC)			
T3	1-431-884-11	TRANSFORMER, DDC OSCILLATION			
		< THERMISTOR >			
THP601	1-809-279-11	THERMISTOR, POSITIVE			
THP602	1-809-001-11	THERMISTOR, POSITIVE			
THP603	1-803-246-21	THERMISTOR, POSITIVE			
THP604	1-803-246-21	THERMISTOR, POSITIVE			
		< FILTER>			
X1	1-767-830-11	FILTER, CERAMIC(DISCRIMINATOR)			
**********					
	1-670-152-11	SWITCH BOARD			
		**********			
		< SWITCH >			
S901	1-771-395-11	SWITCH, SLIDE (FWD/REV)			
**********					
		MISCELLANEOUS			
		**********			
53	1-669-891-11	FLEXIBLE BOARD			
113	1-783-606-11	LEAD, HEAD			
* CN702	1-694-428-11	CONDUCTIVE BOARD, PRESSURE WEL			
HP901	1-500-534-11	HEAD (PLAYBACK)			
L1	1-754-005-11	ANTENNA, FERRITE-ROD			
LCD701	1-803-131-11	DISPLAY PANEL, LIQUID CRYSTAL			
M901	X-3375-573-1	MOTOR ASSY			
S101	1-692-302-11	SWITCH, LEAF (MD POWER)			
**********					
		ACCESSORIES & PACKING MATERIALS			
		**********			
	3-862-482-11	MANUAL, INSTRUCTION(ENGLISH)(US, CND)			
	3-862-482-21	MANUAL, INSTRUCTION(FRENCH)(CND)			
	3-862-482-31	MANUAL, INSTRUCTION (ENGLISH, FRENCH, GERMAN, ITALIAN) (AEP)			
	3-862-482-41	MANUAL, INSTRUCTION (SPANISH, DUTCH, SWEDISH, PORTUGUESE) (AEP)			
	3-862-482-51	MANUAL, INSTRUCTION (ENGLISH, SPANISH, CHINESE, KOREAN) (E)			
	8-952-478-90	HEADPHONE MDR-E215/Y SET (AEP,E)			
	8-953-142-90	HEADPHONE MDR-W14G//K SET (US, CND)			

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HARDWARE LIST
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#1	7-624-101-04	STOP RING 1.2 (E TYPE)
#2	7-627-850-67	SCREW,PRECISION +P 1.4X4
#3	7-685-104-19	SCREW +P 2X6 TYPE2 NON-SLIT
#4	7-685-107-19	SCREW +P 2X12 TYPE2 NON-SLIT

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Personal A&V Products Company

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